Climate Change and Human Health Literature Portal

National Institute of
Environmental Health Sciences

Simulating malaria model for different treatment intensities in a variable environment

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Abstract:

The mathematical model proposed here applies to the Brazilian Amazon region, where the seasonal fluctuation of the mosquito density is clearly observed. The main vector of this region is the Anopheles darlingi, and its latent period is directly linked to the environment temperature. The mathematical model also considers different treatment levels accessible to the infected people. We believe that as the malaria treatment already exists it should be important to concentrate efforts on this theme in order to provide guidelines for the success of malaria control. The numerical simulations show the seasonal fluctuation effects and the relationship between the increase in temperature and treatment efficiency. Particularly it is shown that an increase in temperature strongly affects the latent period, reducing drastically the health care efficiency. (c) 2007 Elsevier B.V. All rights reserved.

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Resource Description

Early Warning System: ☒

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

 A focus of content

Exposure : ☒

weather or climate related pathway by which climate change affects health

 Ecosystem Changes, Temperature

   Temperature: Fluctuations

Geographic Feature: ☒

resource focuses on specific type of geography

 Tropical

Geographic Location: ☒

resource focuses on specific location

Non-United States

Non-United States: Central/South America

Health Impact: ☒

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: Malaria

Mitigation/Adaptation: ☒

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology: ☒

type of model used or methodology development is a focus of resource

Exposure Change Prediction, Methodology, Outcome Change Prediction

Population of Concern: A focus of content

Resource Type: ☒

format or standard characteristic of resource

Research Article

Timescale: ☒

time period studied

Short-Term (

Vulnerability/Impact Assessment: ☒

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content